



## 2019-nCoV Literature Situation Report (Lit Rep)

January 14, 2021

The scientific literature on COVID-19 is rapidly evolving and these articles were selected for review based on their relevance to Washington State decision making around COVID-19 response efforts. Included in these Lit Reps are some manuscripts that have been made available online as pre-prints but have not yet undergone peer review. Please be aware of this when reviewing articles included in the Lit Reps.

### Key Takeaways

- **Interim results of the phase 1-2a trial of the Johnson & Johnson adenovirus vector vaccine (Ad26.COV2.S) showed SARS-CoV-2 neutralizing-antibody titers were detected in 90% or more of all participants on day 29 after the first dose and reached 100% by day 57 regardless of age or dose group. The most frequent adverse events included fatigue, headache, and fever. [More](#)**
- **Genomic virus surveillance identified a dominant SARS-CoV-2 variant originating from the southern US as early as late May 2020. The variant, referred to as 20C-US, has undergone at least 7 mutations with implications for efficient and accurate virus production, including a Q677H mutation in the spike protein. [More](#)**
- **SARS-CoV-2 RNA was detected on a sample collected from a door handle in Florida on February 21, 2020, before the first official COVID-19 case in Florida on March 1. Sequence analysis found that the Florida strain was identical to strains identified in Washington State during the same time period. [More](#)**

### Non-Pharmaceutical Interventions

- A comparison of 21 different face coverings made from household materials found that 1000-thread-count cotton had a filtration efficiency of at least 40% for sub-micron aerosols while offering comparable breathing resistance to N95 respirators, providing some level of protection for the wearer. In contrast, most single-layered materials had filtration efficiencies of <20%, offering little protection. Layering materials with the same or different material compositions demonstrated higher filtration efficiencies for larger droplets ranging from 0.5-0.6cm and are likely to be sufficient for control of transmission from a wearer who is infected with SARS-CoV-2.

*Guha et al. (Jan 13, 2021). Comprehensive Characterization of Protective Face Coverings Made from Household Fabrics. PLOS ONE. <https://doi.org/10.1371/journal.pone.0244626>*

### Transmission

- *[pre-print, not peer reviewed]* Genomic virus surveillance has identified one of the most prevalent SARS-CoV-2 variants in the US, referred to as 20C-US. Earliest 20C-US genomes have been traced in the southern US as early as late May. 20C-US has acquired up to 7 non-synonymous mutations with implications for efficient and accurate virus production, including a Q677H mutation in the spike protein. The authors predict that 20C-US may be the most dominant variant in the US.

Pater et al. (Jan 13, 2021). *Emergence and Evolution of a Prevalent New SARS-CoV-2 Variant in the United States*. Pre-print downloaded Jan 14 from <https://www.biorxiv.org/content/10.1101/2021.01.11.426287v1>

- A systematic review and meta-analysis of 11 studies from Europe, Asia, Australia, and South America indicate that the overall SARS-CoV-2 attack rate and positivity rate in school environments are low. Data from 5 cohort studies (n=3,345 contacts and 8 transmissions) found a pooled attack rate of 0.15% for students and 0.7% for staff. Across 6 cross-sectional studies (n=639 positive cases among 6,682 participants tested), the proportion of positivity was 8% among students and 14% among staff. Authors note that overall study quality was judged to be poor and at risk of performance and attrition bias.

Xu et al. (Dec 10, 2020). *What Is the Evidence for Transmission of COVID-19 by Children in Schools? A Living Systematic Review*. *Journal of Global Health*. <https://doi.org/10.7189/jogh.10.021104>

## Geographic Spread

- A sample collected from a door handle on February 21, 2020 in an influenza surveillance study in Florida tested positive for SARS-CoV-2 RNA, despite the first official case of COVID-19 in the state not being reported until March 1, 2020. Sequence analysis found that the Florida SARS-CoV-2 strain, UF-11, was identical to strains identified in Washington State during the same time period. Live virus was not isolated from the sample, and analysis of sequences from COVID-19 patients in the same region suggest limited subsequent transmission of the UF-11 strain.

Lednicky et al. (Jan 13, 2021). *Earliest Detection to Date of SARS-CoV-2 in Florida: Identification Together with Influenza Virus on the Main Entry Door of a University Building, February 2020*. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0245352>

- Combined daily COVID-19 prevalence and flight passenger volume were used to estimate importations of SARS-CoV-2 from China. Researchers estimated that Wuhan was the primary source of global case importation from China in early January, but shifted to 18 other Chinese cities as the source in mid-February, particularly for importations to African destinations. The authors estimate that a total of 10 COVID-19 cases were imported to African locations by the end of February 2020, with the highest number of predicted imports in South Africa, Algeria, and Kenya. 90% of case importations in these locations occurred between January 17 and February 7.

Menkir et al. (Jan 12, 2021). *Estimating Internationally Imported Cases during the Early COVID-19 Pandemic*. *Nature Communications*. <https://doi.org/10.1038/s41467-020-20219-8>

## Testing and Treatment

- A modeling study suggests that pooled SARS-CoV-2 RT-PCR testing where samples are pooled according to age group could decrease the number of tests per subject needed to diagnose one case, compared to conventional pooling that determines group size according to community prevalence. Though the decrease is small, large-scale testing could amplify savings, particularly in settings where there is more heterogeneity in positivity rates among age groups.

Fernández-Salinas et al. (Dec 28, 2020). *Modelling Pool Testing for SARS-CoV-2: Addressing Heterogeneity in Populations*. *Epidemiology and Infection*. <https://doi.org/10.1017/S0950268820003052>

- Three self-collected non-nasopharyngeal swab techniques (saline gargle, oral swab, and oral-anterior nasal swab) demonstrated similar sensitivity to a provider-collected nasopharyngeal swab, when a positive test on any of the samples tested was used as the reference standard. Compared to 90% sensitivity using the provider-collected nasopharyngeal swab, the saline gargle, oral swab, and oral-anterior nasal swab techniques had adjusted sensitivities of 90%, 82%, and 87%, respectively.

*Kandel et al. (Jan 13, 2021). Detection of SARS-CoV-2 in Outpatients: A Multi-Centre Comparison of Self-Collected Saline Gargle, Oral Swab and Combined Oral-Anterior Nasal Swab to a Provider Collected Nasopharyngeal Swab. Infection Control & Hospital Epidemiology.*

<https://doi.org/10.1017/ice.2021.2>

## Vaccines and Immunity

- Interim results of a randomized, double-blind, placebo-controlled phase 1-2a trial of the Johnson & Johnson adenovirus vector vaccine Ad26.COVS.2 (n=805) showed acceptable safety, reactogenicity, and immunogenicity profiles across age and dose groups. Participants included in the interim analysis were split between “cohort 1” (n=402, age 18-55 years), which received two doses 56 days apart, and “cohort 3” (n=403, age ≥65 years), which received only one dose; both cohorts received either low-dose vaccine, high-dose vaccine, or placebo.
- The most frequent solicited adverse events were fatigue, headache, myalgia, and injection-site pain, while the most frequent systematic adverse event was fever that resolved within 1 or 2 days. Adverse events were less common in “cohort 3” than in “cohort 1” and in those receiving low versus high dose vaccine. Neutralizing-antibody titers were detected in 90% or more of all participants on day 29 after the first dose, and reached 100% by day 57 regardless of age or dose group. A second dose increased titers 2.6 to 2.9 times. On day 14, CD4+ T-cell responses were detected in 76-83% of “cohort 1” participants and in 60-67% of “cohort 3” participants.

*Sadoff et al. (Jan 13, 2021). Interim Results of a Phase 1–2a Trial of Ad26.COVS.2 Covid-19 Vaccine. New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2034201>*

## Clinical Characteristics and Health Care Setting

- A nationwide retrospective study in Finland (n=260,405) found that while obstructive sleep apnea (OSA) was not associated with a COVID-19 diagnosis, OSA was associated with COVID-19 hospitalization (aOR=2.93) after adjusting for age, sex, BMI, and comorbidities. A separate meta-analysis including other published studies found a pooled OR estimate of 1.55.
- After disinfection of two tertiary COVID-19 ICUs in Switzerland, no SARS-CoV-2 RNA was detected among 86 swabs sampled from defined locations. 90 swabs sampled in parallel in the same locations revealed low contamination with gram-negative bacteria, particularly in sinks and siphons. One ICU was disinfected with Kohrsolin 1% and dry mist hydrogen peroxide, while the other ICU was disinfected with Kohrsolin 1% alone. Disinfecting staff were blinded to the study.

*Hofmaenner et al. (Jan 12, 2021). Bacterial but No SARS-CoV-2 Contamination after Terminal Disinfection of Tertiary Care Intensive Care Units Treating COVID-19 Patients. Antimicrobial Resistance & Infection Control. <https://doi.org/10.1186/s13756-021-00885-z>*

## Public Health Policy and Practice

- A population-based retrospective cohort study in Ontario, Canada (n=29,407) found that compared to community-dwelling people, people with a recent history of homelessness were more likely to be tested for SARS-CoV-2 and to have a positive test result during the pre-shutdown, peak, and reopening phases of the pandemic. During the peak period, people with a recent history of homelessness were over 20-times as likely to be admitted to hospital for COVID-19, over 10-times as likely to require intensive care for COVID-19, and over 5-times as likely to die within 21 days of their first positive test result.

*Richard et al. (Jan 11, 2021). Testing, Infection and Complication Rates of COVID-19 among People with a Recent History of Homelessness in Ontario, Canada: A Retrospective Cohort Study. CMAJ Open. <https://doi.org/10.9778/cmajo.20200287>*

- Headache, followed by cough, sore throat, and aches, were the most frequently reported symptoms in a COVID-19 app-based monitoring study conducted within a public university population in the US (n=20,000). Analysis of data from individuals with GPS movement data (n=175) show that reported symptoms or prior COVID-19 contact did not significantly affect individual movement.

*Wojtusiak et al. (Jan 7, 2021). COVID-19 Symptom Monitoring and Social Distancing in a University Population. Journal of Healthcare Informatics Research. <https://doi.org/10.1007/s41666-020-00089-x>*

## Other Resources and Commentaries

- [Cost Effective COVID-19 Mitigation Measures in US Colleges](#) – PharmacoEconomics & Outcomes News (Jan 9)
- [The Benefits and Costs of Social Distancing in High- and Low-Income Countries](#) – Transactions of The Royal Society of Tropical Medicine and Hygiene (Jan 13)
- [The Need for Novel Approaches in Assessing the Value of COVID-19 Vaccines](#) – American Journal of Public Health (Jan 13)
- [How COVID Unlocked the Power of RNA Vaccines](#) – Nature (Jan 14)
- [COVID-19 Has Revealed America's Broken Health Care System: What Can We Learn?](#) – International Journal of Health Services : Planning, Administration, Evaluation (Jan 12)
- [\(A Little\) Clarity on Convalescent Plasma for Covid-19](#) – New England Journal of Medicine (Jan 13)
- [Covid-19: Controversial Rapid Test Policy Divides Doctors and Scientists](#) – BMJ (Jan 12)
- [How Can Countries Stretch COVID Vaccine Supplies? Scientists Are Divided over Dosing Strategies](#) – Nature (Jan 14)
- [How the Oxford-AstraZeneca Covid-19 Vaccine Was Made](#) – BMJ (Jan 12)
- [The COVID-19 Pandemic—An Opportune Time to Update Medical Licensing](#) – JAMA Internal Medicine (Jan 13)
- [The Contribution of Prisons and Jails to US Racial Disparities During COVID-19](#) – American Journal of Public Health (Jan 13)
- [Mathematical Modeling of COVID-19 in 14.8 Million Individuals in Bahia, Brazil](#) – Nature Communications (Jan 12)
- [COVID-19 and Nonsuicidal Self-Injury: The Pandemic's Influence on an Adolescent Epidemic](#) – American Journal of Public Health (Jan 13)
- [A Rapid and Reproducible Picture of Open Access Health Facility Data in Africa to Support the COVID-19 Response](#) – Wellcome Open Research (Jul 6)

- [COVID-19 Epidemic Prediction and the Impact of Public Health Interventions: A Review of COVID-19 Epidemic Models](#) – Infectious Disease Modelling (Jan 7)

*Report prepared by the UW Alliance for Pandemic Preparedness and Global Health Security and the START Center in collaboration with and on behalf of WA DOH COVID-19 Incident Management Team*